

**We Claim:**

1. An embedded system connected to an IOT of a device through at least one existing device interface and comprising data collection and display functionality, and a local UI for operation and management of functionality locally, and a services platform and APIs for remote connectivity and device-centric services.
2. The system of claim 1 comprising a networked, embedded personal computer in a housing with no direct input or output devices.
3. The system of claim 1 wherein the system is connected to the IOT through at least two physical interfaces.
4. The system of claim 1 further comprising a UI available via a browser running on a computer on a network to which the system is connected.
5. The system of claim 1 further comprising a web server.
6. In an embedded system comprising a web browser connected to an IOT of a device and to a network, a method of interacting with the embedded system comprising:
  - configuring the embedded system with network information;
  - using a browser as the local UI for the embedded system;
7. The method of claim 6 wherein configuring the embedded system includes loading network proxy, firewall password, and DNS IP addresses.
8. The method of claim 6 wherein configuring the embedded system enables the embedded system to connect to an edge server.

9. The method of claim 8 wherein the edge server manages the queues, messages, services, and transactions associated with the end-to-end operation of the device services.

10. An add-on component comprising:

a power supply;

a motherboard;

an auxiliary input/output board;

a non-volatile memory; and

a housing within which the power supply, motherboard, auxiliary input/output board, and NVM reside.

11. The component of claim 10 further comprising an operating system embedded on the motherboard.

12. The component of claim 10 wherein the NVM is flash memory.

13. The component of claim 10 further comprising an network interface.

14. The component of claim 10 further comprising at least one interface compatible with an IOT of a device.

15. The component of claim 14 wherein the at least one interface comprises a serial port.

16. The component of claim 14 wherein the at least one interface comprises EPSV.

17. The component of claim 14 wherein the at least one interface comprises PWS.

18. The component of claim 14 wherein the at least one interface comprises a CAN Bus.

19. The component of claim 10 further comprising a router connected to the at least one interface to manage information.

20. The component of claim 19 wherein the router preempts activity in response to a higher priority interface becoming active.

21. The component of claim 20 wherein the at least one interface includes a PWS port and a serial port and the router preempts activity on the serial port when the PWS port becomes active.

22. The component of claim 4 further comprising an embedded software system that provides flexible components in support of locally hosted functions and services that can be dynamically added and configured.

23. The component of claim 22 wherein the flexible components include a device model agent, a Java virtual machine, and a web server.

24. A diagnostic service for a device comprising:

a user interface (UI) accessible by a user and in communication with an operating system of a device; and

UI elements representing at least one diagnostic routine for the device.

25. The service of claim 24 further comprising at least one device provided diagnostic routine preexisting on the device.

26. The service of claim 24 further comprising at least one service provided diagnostic routine.

27. The service of claim 26 wherein the at least one service provided diagnostic routine includes a method of executing a plurality of routines in a specific order to optimize toner density levels and obtain consistent image quality.
28. The service of claim 25 wherein the at least one device provided diagnostic routine includes a belt edge learn routine that learns the edge of a new intermediate belt to improve lateral registration and belt steering performance.
29. The service of claim 25 wherein the at least one device provided diagnostic routine includes a registration control routine that sets up the complete image on image registration system found in the IOT.
30. The service of claim 25 wherein the at least one device provided diagnostic routine includes a halftone routine that adjusts the halftone densities printed by the system.
31. The service of claim 24 wherein the UI is a Web based UI provided by an embedded web server.
32. The service of claim 31 wherein the UI is accessible from any networked personal computer with a suitable browser.